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23 AUG 1966

MEMORANDUM FOR: Director of Computer Services

SUBJECT: Supplemental Budget Request for Automatic Data Processing Division, OSA

REFERENCE: Memorandum from DC/ADP/OSA to D/OCS and D/SA: dated 20 June 1966; Subject: OSA Data Processing Requirements

1. Currently the OSA Automatic Data Processing Division processes OXCART flight plans through the use of the IBM 7090 Scientific Computer controlled by the Office of Computer Services. The software and hardware design philosophy of the IBM 7090 does not lend itself to state-of-the-art computer flight planning techniques, although current results are far superior to manual methods. While approximately 20 minutes of actual computer time is required to batch-process a flight plan, the associated man-machine interface requires at least one hour of additional time. If the entire task were to be performed by manual methods a minimum of 12 man hours would be required for each flight plan.

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2. Recently a contract has been let to [redacted] to develop a large scale vulnerability program for the U2 vehicle. This program will be modified in house to include the OXCART vehicle. The addition of this program to a basic flight plan program will increase the computer run time of 20 minutes to 90 minutes on the presently installed computer.

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3. The most glaring weakness in the present system is its inability to respond to random processing requests and to adjust to workload variations. In order to use the IBM 7090 effectively one must pass the program input and output through an auxiliary computer. These steps are not only time consuming, but lessen the possibility of error free manual and machine operations.

4. It is in part for these reasons that OCS has on order an IBM 360/67 computing system. This new computer by hardware and software design provides on-line communication to and from remote stations, billionth of a second computational speeds, an almost limitless capability for general and special purpose input-output equipment, modular expandibility of the central processing equipment, real-time processing, multiprogramming and multiprocessing.

5. The continuing requirement to improve the flight planning operation in scope and time forces this Division to make full use of the IBM 360/67 system. Through the use of remote console and real-time programming the Division will not only reduce the "response time" from the computer, but increase the availability of the computer. This will increase the effectiveness of both flight planner and programmer output. The major benefits to be accrued by use of the console will be the effective increase of time available for new applications and the ability to monitor the computer operations. As more and more demands are placed upon the computer, the Automatic Data Processing Division must endeavor to keep run time within a tolerable limit. With the added burden of program testing, new projects and communications systems, it becomes evident that we must permit the computer to resolve its tasks in the most expeditious manner. Only through the use of consoles can we expect to progress in the flight planning area, because without them we are disallowing

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the utilization of programming techniques which would materially benefit the flight planning operation. The door must be opened now to permit the use of these techniques. With the rapid rise in reconnaissance technology, the simulator computer programs must be able to keep pace.

6. It is very difficult to place a dollar value or worth on the increase in flight planning flexibility which will be afforded by the purchase of these consoles. We firmly believe, however, that we will reduce the probability of kill by route selection to the lowest possible figure. More so probably than any defensive system on board, the flight plan will increase the probability of success for the mission. Increased productivity from the flight planner, programmer and computer will also reduce the cost per information unit ratio.

7. The consoles chosen by the OSA Automatic Data Processing Division are the Bunker-Ramo BR-90 and International Telephone and Telegraph - Electronic Typewriter OA-6514/FYA-2. Both units are in existence and in production. OSA has studied the full range of available display consoles and related equipments and has chosen the above units based upon performance, price, hardware/software availability, proven reliability, ease of operation, design characteristic, display quality, and OSA needs. These units will be connected to the IBM 360/65 for debug and production purposes in a quasi-real-time conversational manner to reduce the time to a full operational posture on the IBM 360/67.

8. The following 1967 budget procurement options exist for the consoles:

Equipment Rental (Monthly)

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9. Fiscal year 1967 contract maintenance and site preparation cost are as follows:

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ORD is contemplating the acquisition of a HR-90 console. One maintenance contract could service both machines thereby reducing or eliminating the costs of maintenance to OSA.

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Distribution:
#1 & #2 - D/OCS
#3 - Compt/OSA
#4 - D/O/OSA
#5 - C/ADP/OSA
#6 - Chrono
#7 - RB/OSA